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Air Operating Permit
Excess Emissions Report
Form Part II

Name of Facility	Shell, Puget Sound Refinery	Reported by	Tim Figgie
Date of notification	January 3, 2015	Incident type: breakdown/ upset/startup or shutdown	Breakdown
Start Date	January 3, 2015	Start Time:	1:00 AM
End Date	January 3, 2015	End Time:	3:00 AM
Process unit or system(s): Flare			

Incident Description

On January 3, 2015 at approximately 1:10 AM the flare H₂S reading went high when the flare line pressure went above the FGR base operating pressure range. This resulted in sour flare gas breaking through the flare seal pot and causing high H₂S readings in the flare. The spike in the flare line pressure was the result of liquids in the plant fuel gas header that caused a temporary blockage and pressure differential in the HTU1 fuel gas header (The liquids in the fuel gas header flow to the fuel gas mixed drum for removal). This caused a PRV on the HTU1 fuel gas mix drum to relieve to the flare, resulting in increased flow and pressure in the flare header. FGR compressors were operational at the time but the system could not react quickly enough to capture this short term pressure spike. The pressure spike to the flare lasted only about 3-minutes although it took several hours for the sour gas to flow out of the flare line once the system was back to normal operating pressure. This resulted in very low pounds of emissions but a longer period of high H₂S concentration.

The flare system was over-loaded for a short period of time due to several breakdown events occurring at the same time. Along with the HTU1 PRV mentioned above, another contributing event was a PRV that had opened from an Alky1 startup that began the previous day, on Jan 2, and the PRV did not reset. Also, the DCU blowdown compressor was out of service for repair and a DCU blowdown cycle had started at about the same time the HTU1 fuel gas PRV relieved.

This event resulted in 4 periods above the 162ppm H₂S 3-hour rolling average limit.

Immediate steps taken to limit the duration and/or quantity of excess emissions:

The FGR system was operating to recovery as much excess flare gas as possible.

Applicable air operating permit term(s): 5.11.8

Estimated Excess Emissions: Based on online H ₂ S CEMS and fuel gas flow meters	Pollutant(s): SO ₂	Pounds (Estimate): 6
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The incident was the result of the following (check all that apply):

- ☐ Scheduled equipment startup
- ☐ Scheduled equipment shutdown
- ☐ Poor or inadequate design
- ☐ Careless, poor, or inadequate operation
- ☐ Poor or inadequate maintenance
- ☐ A reasonably preventable condition

Did the facility receive any complaints from the public?

- ☒ No
- ☐ Yes (provide details below)

Did the incident result in the violation of an ambient air quality standard

- ☒ No
- ☐ Yes (provide details below)

Root and other contributing causes of incident:

The root cause of this event is high flare pressure due to the HTU1 and Alky1 PRV's relieving and DCU blowdown compressor being out of service for repair at the time of this event.

The root cause of the incident was:

(The retention of records of all required monitoring data and support information shall be kept for a period of five years from the date of the report as per the WAC regulation (173-401-615))

- ☒ Identified for the first time
- ☐ Identified as a recurrence (explain previous incident(s) below – provide dates)

High flare pressure due to the HTU1 and Alky1 PRV's relieving and the DCU blowdown compressor being out of service for repair at the time of this event.

Are the emissions from the incident exempted by the NSPS or NESHAP "malfunction" definitions below?

- ☐ No
- ☒ Yes (describe below)

The incident was the result of a high flare pressure due to the HTU1 and Alky1 PRV's relieving and the DCU blowdown compressor being out of service for repair.

Definition of NSPS "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 60.2

Definition of NESHAP "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 63.2

Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):

To prevent a reoccurrence of this event the both the Alky1 PRV and the DCU blowdown compressor 15K100 have been repaired and put back in service.

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Description of corrective action to be taken (include commencement and completion dates):

See above

If correction not required, explain basis for conclusion:

See above

Attach Reports, Reference Documents, and Other Backup Material as Necessary. This report satisfies the requirements of both NWCAA regulation 340, 341, 342 and the WAC regulation (173-400-107).

Is the investigation continuing?

☒ No ☐ Yes

Is the source requesting additional time for completion of the report? ☒ No ☐ Yes

Based upon information and belief formed after reasonable inquiry, I certify that the statements and information in this document and all referenced documents and attachments are true, accurate and complete.

Prepared By: _ Tim Figgie

Date: ___ January 20, 2015

Responsible Official or Designee:



Date:

2/16/15